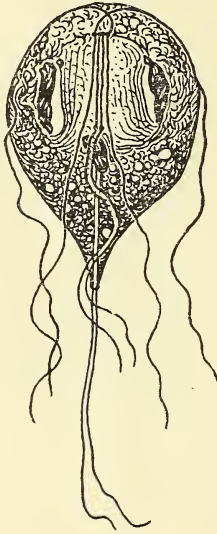


LAMBLLIA SANGUINIS (Nov. Sp.).

By Dr. R. GONDER (with one figure in text).

THE study of the flagellate genus *Lambllia* has lately received more attention through observations made in the case of dysentery, in which disease flagellates, especially *Lambllia*, have been found in large numbers (Prowazek, Bohne, and others). Although the question as to the pathogenicity of this protozoon is still undecided, yet it is probable that in combination with other organisms it may have a harmful effect.



Up to the present *Lamblliae* have been found only in the intestines of rats, mice, cats, rabbits, and the human subject, and organisms similar to *Lambllia* have been found in the stomach of ruminants. It needs further investigations to determine as to whether or not these observations are of practical importance. I think, therefore, that it is interesting from a biological point of view to give a short description of a *Lambllia* which has been found in the blood of a bird.

During the present year, in the Veterinary Bacteriological Institute of the Transvaal, a large number of different species of birds has been shot for the purpose of making experimental investigations with the blood of these birds. The heart-blood of all birds used in connection with these investigations was carefully examined before these experiments were carried out for the presence of parasites or other organisms. By chance a blue hawk (*Elanus coeruleus*) was received, in whose heart's-blood was found an actively motile parasite, which on careful examination proved to be *Lambllia*.

This bird had been only recently shot and had died as a result of the wounds received on the head and wing. It is natural that some may say

that this infection of the heart-blood with *Lambliia* has occurred as the result of invasion from the intestines, but the microscopical examination of the intestines for this parasite was negative. Also other organs, such as the liver and spleen, have not shown the presence of this parasite. The fact that the blood did not show the presence of other organisms or bacteria, with the exception of *Haemoproteus* (a very common parasite of birds), is a proof that invasion from the intestines had not occurred.

We have had then to do with a real parasite of the blood, which parasite has been recognized only as an intestinal one up to the present time.

I have found this parasite (see figure) only in the heart cavities, and there it was present in fairly large numbers. In the smears taken from the surface of the endocardium one could find the parasites in each field of the microscope. The length of the parasite without the flagellum is about 12 μ ., and the breadth measures about 8 μ . seen from above or below. The eight characteristic flagella have nearly the same length, and they are nearly as long as the body of the parasite, that is about 12 μ .

The motions are extraordinarily active and are due to the lashing movements of the flagella, and also to the contractions of the body. The double axial rod (Mittelrippe of Benson), together with its system of fine fibrils, probably plays a large part in producing these contractile motions. These fine fibrils, which connect the basal corpuscles of the flagella together and which also have a connection with the Mittelrippe, give to the flagellate the well-known bilaterally symmetrical form when seen from the side, and the characteristic shape of a pear with a stalk when seen from above or below. In comparison with other known *Lambliae*, such as those of the mouse and human subject, the sucker-like depression of this parasite is smaller. With this apparatus the parasite can fix itself to the endocardium.

Morphologically, *Lambliia sanguinis*, as I will call this flagellate, does not differ markedly from other *Lambliae*. It chiefly resembles *Lambliia muris*; the two nuclei are situated closely to the sides of the parasite. Their shape is elongated. In immediate contact with each of them there is situated a distinct basal corpuscle, and from each of these basal corpuscles there arises a remarkably fine and delicate fibril. These two fine fibrils pass to two other basal corpuscles situated anteriorly, from which arise the two antero-lateral flagella. These two fibrils, which connect these latter corpuscles with those situated in contact with the nuclei, form the anterior portion of the border of the concave depression known as the "peristome area".

From these before-mentioned anterior basal corpuscles there pass two flagella which, originating as fine fibrils, pass forwards, and inter-crossing turn round to pass along the borders of the parasite on either side, and passing to two other basal corpuscles situated about the middle of the *Lambliia* become free. A further pair of fibrils originate from these same anterior corpuscles, and pass on the lower aspect of the parasite in an almost straight line to two other basal corpuscles situated one on either side close to the tail, where they become free. Both pairs of flagella represent the anterior and posterior lateral pairs of flagella.

Between the outermost pair of anterior basal corpuscles a second pair of these corpuscles are situated from which arises the Mittelrippe or double axial rod. These two axial rods are situated very closely together and pass backwards in a straight line. At their ends are situated two basal corpuscles from which the tail flagella arise. Finally, near the middle of the Mittelrippe, are present two basal corpuscles from which the ventral pair of flagella arise. These latter flagella at first run parallel to each other in serpentine fashion, but towards their termination they diverge.

There still remains to be mentioned the curious body situated immediately under the site of origin of the ventral flagella. This corpuscle has an irregular form, but shows a fibrillar structure as seen in other *Lambliae*,

Thus our *Lamblia sanguinis* differs from other known *Lambliae* in the peristome area, being first, smaller; second, it is in part bordered by the fibrils connecting the nuclei to the basal corpuscles, from which arise the antero-lateral pair of flagellae. Also the nuclei are situated very close to the sides of the organism.

Encystment could not be proved.
